WSDOT's Economic Analysis of Incident Response Program

Can You Believe a Benefit/Cost Ratio of 20:1?

WSDOT conducted a comparative analysis on a section of I-405 where incident response vehicles were recently deployed. Prior to the deployment of Incident Response on I-405, the Washington State Patrol was called upon to clear disabled vehicles. Incident Response was only called out to provide assistance at major incidents that were anticipated to last one hour or longer.

I-405 Disabled Vehicle Study

The Washington State Patrol's Computer Aided Dispatch (CAD) system shows that in 2000 on I-405 (before Incident Response vehicles patrolled the corridor), it took an average of 17 minutes to clear a disabled vehicle.

Data from WSDOT's Incident Tracking System (WITS) from 7/1/02 to 9/30/02 (after Incident Response vehicles began patrolling I-405) revealed that it took an average of 10 minutes to clear a disabled vehicle.

Comparing the results shows a 7-minute reduction in delay since Incident Response units began roving the I-405 corridor.

Comparing "Apples to Apples"

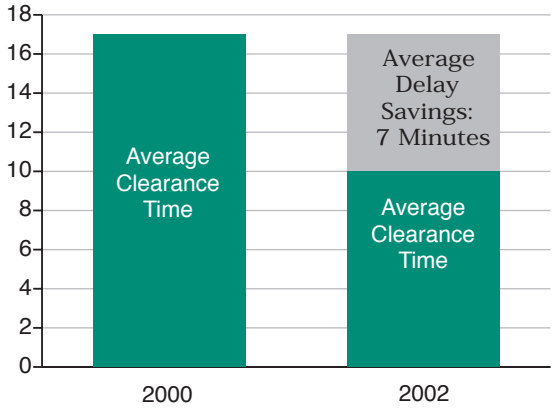
In order for the analysis to have a credible foundation, real data at a location on I-405 that corresponded to the disabled vehicle study was needed. In the same months used for determining the clearance time for disable vehicles with Incident Response, there were a total of 7 disabled vehicle incidents that blocked a single lane on Northbound I-405 in the vicinity of milepost 13.5. A loop detector was also at that location. (A loop detector is necessary to provide the volume of traffic at any given time. The same loop detectors are also used to calculate travel times.) Highway performance Monitoring Data was also available at that location which was necessary to compute the percent of commercial trucks. In short, all the data used in the analysis was specific to the location and timeframe of the 7 incidents.

Placing a Dollar Value on Reduced Delay

Based on a documented incident that occurred on I-405 at milepost 13.5, and using WSDOT's standard User Cost Parameters, the savings in dollars for one Disabled Vehicle for fuel and other operating costs is over $5,800. The savings for cost of time is over $7,000.

I-405 Disabled Vehicles

Average Delay Savings with Incident Response in Minutes



On average, WSDOT responds to twice as many disabled vehicles as all other types of incidents combined (from 7/1/02 to 9/30/02, WSDOT responded to over 6,300 incidents. Of those incidents, over 3,700 were disabled vehicles).

I-405 MP 13.5 Disabled Vehicle Cost Calculations

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Capacity	6,408 Vehicles per Hour
Volume	5,592 Vehicles per Hour
Percent of Commercial Trucks	6%
Number of Lanes Blocked	1 Lane
Clearance Time	10 Minutes
w/o Incident Response	17 Minutes
Fuel & Other Operating Costs	
Fuel & Other Operating Costs - Auto	$3.75 per Hour
Fuel & Other Operating Costs - Truck	$32.85 per Hour
Costs of Time	
Costs of Time - Auto	$6.12 per Hour
Costs of Time - Truck	$20.22 per Hour

Using the seven disabled vehicle incidents that blocked a single lane on I-405 in the vicinity of MP 13.5 during July 2002 to September 2002, a savings of $5,800 per incident (when calculating only the fuel and operating costs) translates into a total savings of over $40,000 to the traveling public. These savings come from the seven-minute reduction in incident-related delay made possible by the deployment of the Incident Response units.

This is a work in progress. WSDOT welcomes comments on this article and continues to monitor national forums on congestion management strategies.